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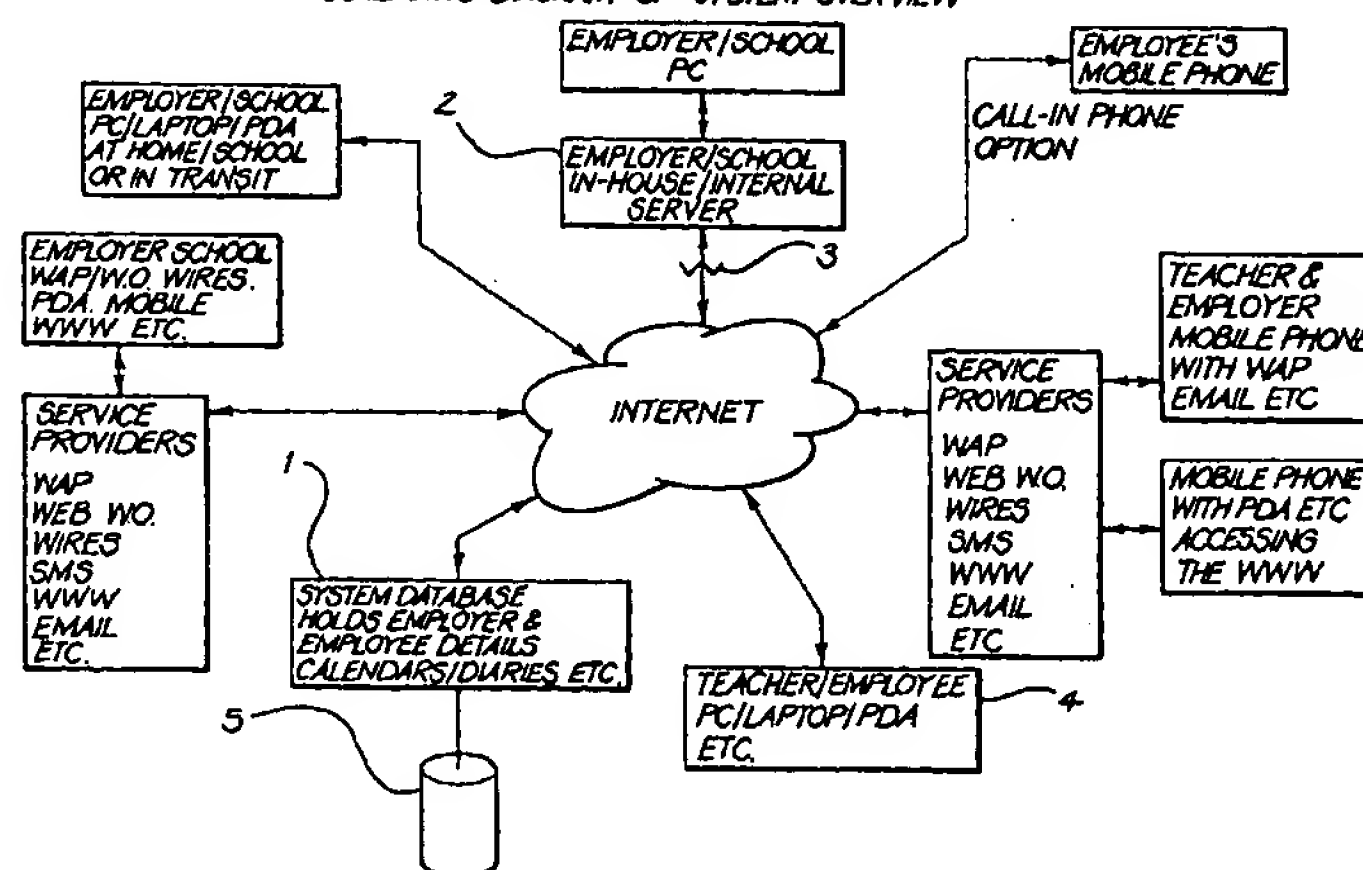
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(54) Title: METHOD AND SYSTEM FOR FILLING VACANCIES

SCHEMATIC DIAGRAM OF SYSTEM OVERVIEW



(57) Abstract: This invention concerns filling vacancies. It may be applied to finding replacements during staff shortages, or to filling entire rosters. It may also be used to fill casually occurring service needs, such as the need-for a child minding placement. The invention involves entering availability details into a candidate data store, and entering vacancy details into a vacancy data store. Automatic cross-matching of each vacancy to availability details create a list of available candidates for each vacancy. Automatically ordering the list for each vacancy ranks the candidates according to predetermined criteria. The vacancies are then filled with the top ranking available candidate. This may be performed automatically or involve the transmission of invitations and acceptances. The invitations may be automatically dispatched, and the responses may automatically update the data. It may be layered to integrate the filling of a vacancy with the provision of a service for a related period of time. For instance, integrating the filling of a teaching or nursing staff vacancy with the provision of child minding services for the same period.

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Title:**Method and System for Filling Vacancies****Technical Field**

This invention concerns filling vacancies. It may, for example, be applied to finding replacements during staff shortages, or to filling entire rosters. It may also be used to fill casually occurring service needs, such as
5 the need for a child minding placement. It may be layered to integrate the filling of a vacancy with the provision of a service for a related period of time. For instance, integrating the filling of a teaching or nursing staff vacancy with the provision of child minding services for the same day.

10 Background Art

Currently throughout education, medical, commercial, hospitality and retail industries, one of the most onerous and time-consuming tasks is finding replacement employees at short notice. This activity frequently takes place under time constraints and may not result in the best available person or best
15 qualified person being found.

Also, a large pool of potentially available personnel, namely parents of young children, cannot be utilized because they are unable to find child-minding services at short notice.

20 Summary of the Invention

The invention is a method for filling vacancies comprising the steps of:

- Entering availability details into a candidate data store;
- Entering vacancy information into a vacancy data store;
- 25 Automatically cross-matching each vacancy to availability details to create a list of available candidates for each vacancy;
- Automatically ordering the list for each vacancy to rank the candidates according to predetermined criteria; and
- Filling each vacancy in turn with the top ranking available candidate.

30

The filling of each vacancy may be automatic. Alternatively, the method may be extended to include the steps of communicating an invitation to the top ranked candidate in respect of each vacancy and filling that

vacancy, by updating the candidate and vacancy data stores, if a positive response is received within a predetermined time. Otherwise, if a negative response is received, or no response is received within the predetermined time, then communicating another invitation to the next ranked candidate, as
5 above, until the vacancy is filled.

Using this method, the best ranked and available candidate may be found for each vacancy in the shortest possible time. The vacancy may be for an employee's position, for instance while a permanent employee is absent, or where there is a shortage. In this case the candidate is generally a suitably
10 qualified person who only wishes to work on a casual basis. Alternatively, the vacancy may be for a service need, for instance rather than recruiting a person to provide the services, it may be desirable to locate an appropriate facility with spare capacity. In this case the vacancy may be for child
minding services for a single child, and the candidate may be a child minding
15 facility which has a child absent for some reason.

Where the candidates are casual employees, information about the working commitments of the permanent staff currently employed by an employer may also be entered into a data store. This information may include availability and job role information.

20 Vacancy information may be entered into the vacancy data store by listing all the relevant data, or by nominating the absent permanent staff person's name and automatically providing all their work commitment information.

The casual staff requirement may be automatically rationalized by
25 analyzing the work commitments of all the absent permanent staff over a given period of time.

Where a vacancy cannot be matched to an availability, or no suitable available candidates are found, the vacancy may be split into smaller sub-vacancies and the cross-matching repeated to create a list of available
30 candidates for each sub-vacancy. Then the candidates are ranked to fill each sub-vacancy.

The predetermined criteria may be defined by the employer. The criteria may include experience and performance. They may include a 'seek-first' criterion that gives a top ranking to candidates identified by that
35 employer. They may also include ranking adjustments for a candidate available to fill successive vacancies, whether for the same or a different

position, over several days in a given period of time. The ability to generate and apply these grading rules gives the employer greater control of the process than provided through an external agency while also allowing their preferences to remain private as no third party is informed. The ranked list
5 may also be rearranged according to an additional criterion of the employer after the automatic sort and before the messages are communicated.

Templates of the invitations could be pre-stored and the appropriate vacancy and candidate information automatically inserted upon generation of the invitations. The use of automatic messaging ensures that a greater degree
10 of accuracy is achieved as the re-entry of data is not required.

The communicating of the messages may be done automatically using any suitable communications medium. For instance, fixed and mobile phones, WAP, SMS, Internet, Intranet, email, I-mode, UMTS, GPRS, 3G and other developing technological video streaming, data/voice/video messaging
15 systems, including remote access through devices such as personal digital assistants and web phones and wireless protocols

The first ranked candidate may be automatically preliminarily booked and considered unavailable for the dates and hours included in an invitation during the time that the invitation remains open to that candidate, or until
20 they transmit a response. This avoids the problems associated with a candidate receiving multiple conflicting offers from different vacancy data stores. Alternatively, multiple offers may be allowed, especially where those offers are to commence some considerable time in the future, and once the candidate accepts one of them, a rejection is automatically recorded for the
25 others.

To encourage candidates to maintain the accuracy of their availability information and hence also maintain the efficiency of the system, each time candidate information is found to be inaccurate or a candidate declines an employment offer, this could be noted against their record. Similarly, if a
30 candidate fails to appear for an accepted offer, this may also be noted. These notices could be used to affect that candidates ranking.

A candidate data store may contain details of positions accepted by a candidate and comments on their performance. The candidate may make this information available to all potential employers as a reference.

35 The cross matching of availability may utilise electronic diaries, calendars or rosters of employers, employees and candidates. These may be

automatically updated from the candidate and vacancy data stores to keep them synchronised. Payroll may be compiled from these data stores.

Optionally, each employer, employee and candidate could access their own past records through their respective diaries to assist with their own
5 record keeping.

Optionally, an employee may report their absence using such a diary.

To provide privacy, any security systems, such as firewalls, registration numbers, passwords and pin numbers could be used.

10 The method may be implemented in layers, so that a first implementation layer may recruit casual teachers or nursing staff, and a second implementation layer may operate to find child minders for the teacher and nurse candidates to enable them to accept invitations. The implementation layers may communicate with one another so that a vacancy
15 offered to a teacher may cause an invitation for a child minding place. If the child minding place is available the layers may communicate so that the teaching or nursing vacancy is automatically accepted.

Another aspect of the invention is a computer system for filling
20 vacancies, comprising:

- A candidate data store to accept and store availability details data;
- A vacancy data store to accept and store vacancy data;
- A processor to automatically cross-match each vacancy to availability details to create a list of available candidates for each vacancy, to
25 automatically order the list for each vacancy to rank the candidates according to predetermined criteria, and to fill each vacancy in turn with the top ranking available candidate.

Each vacancy may be automatically filled. Alternatively, the system
30 may operate to forward an invitation for transmission to the top ranked candidate in respect of each vacancy and to receive a response, and to fill that vacancy by updating the candidate and vacancy data stores if a positive response is received within a predetermined time. Otherwise, if a negative response is received, or no response is received within the predetermined
35 time, to forward another invitation for transmission to the next ranked candidate, and so on, until the vacancy is filled.

The system may further comprise a communications subsystem for transmitting the invitations and receiving responses to them.

Brief Description of the Drawings

5 An example of the invention will now be described with reference to the accompanying drawings; in which:

Fig. 1 is a schematic diagram of a computer system including individual school and teacher systems; and

10 Fig. 2 is a flow chart of the procedure when using WAP, web based, wireless protocols, PDAs, voice/data/video messaging systems as automatic communication means;

Best mode for carrying out the invention

15 The example concerns the education industry, and in particular the employing of casual teachers to replace absent employees on a day-to-day basis.

Referring first to Fig. 1, each school registered with the system 1 is provided with a program for use on their internal sub-system only 2, including a calendar/diary, on which they will store their own confidential
20 information about prospective casuals, part-time employers or contract workers. Subjects, teacher types and schools have specific nominated codes which are used throughout the entire system, by both schools and teachers.

The school's sub-system will include information including its Department of Education and Training number with a unique state number
25 concatenated to the beginning to uniquely identify the schools. The school may also maintain details of the teaching commitments of each member of staff on their sub-system. The school's calendar/diary includes dates of in-service, holidays and other relevant information such as long-service and maternity-leave dates where a replacement will be needed. Each system 2 is
30 protected by a security screen 3 and a password.

Video streaming and/or presenting positive news and images about schools and locations/districts that are difficult to staff, in order to overcome stereotypes and to present a positive image. These powerful tools have the capacity to greatly assist in the recruitment and retention of casual teachers.

35 The school may also include on their sub-system a predefined set of rules that will enable the school to grade all prospective teachers according to

various criteria selected by them. For example the schools will rank the teachers, for internal purposes of that school only, into categories. An example of eight possible categories are:

1. Highly recommended
- 5 2. Recommended
3. Not Yet Ranked
4. Not previously employed at this school
5. If required
6. Not recommended
- 10 7. Teacher has been requested not to be employed at this school
8. Not to be employed

Factors that can be taken into account when grading teachers include, but is not limited by:

- 15 1. Previous experiences with that school;
2. Duration of previous experience with that school
3. Levels taught;
4. Last date employed;
5. The need for child-minding or the amount of child minding hours
- 20 required;
6. Information assessed from CVs and interviews, including years of seniority;
7. Specific qualification;
8. Comments made by other schools based on previous employment;
- 25 9. Distance from the school (can be calculated from postcodes; mapping as provided by Telstra white pages maps and GPS approximations);
10. Whether employee has specifically preferenced that school
11. Whether Employee has specifically preferenced certain levels of teaching;
- 30 12. Qualifications, such as subjects qualified to teach; and
13. Any additional desirable speciality qualifications or interests such as specific languages, or poor track record.

All teachers registered with the system 1 have access via their personal computers or laptops 4, to their own sub-systems with individual
35 calendars/diaries containing approximately two years of dates upon which.

teachers place their availability information for transfer and storage in an availability data store 5, when the teacher is connected to the system 1.

The teacher may also provide details of their child-minding requirements, such as the date of birth of the child and the duration on the calendar/diary which will arise in the event that they accept employment for any of the availability times contained on the calendar/diary. The teachers have the responsibility of keeping the calendar/diaries accurate. However, the calendar/diaries are automatically updated by the system in the event that the teacher accepts or rejects an offer of employment. These calendars/diaries are connected to the system 1.

An example of the information that the teacher would be required to supply is as follows:

Name
 15 Phone number:
 Home:
 Mobile:
 E-mail Address:
 Address (suburb and postcode only):
 20 Postal Address (for internal school records only, used to post salary
 cheques, superannuation information and other relevant information.)
 Type of Teacher (use code):
 Pre-School
 Infants
 25 Primary
 Secondary
 Subjects qualified to teach (list codes):
 What levels qualified to teach subject:
 Formal credentials for these subjects:
 30 Subjects prepared to teach:
 Teaching preference for subject (level 1 to 3):
 Department of education and training approval number:
 Catholic Education Office
 Independent Schools
 35 Anglican Schools
 No approval number currently required for the following categories:

Before school care

After school care

Vacation Care

Long day care

- 5 Evidence of Lodgement of "Prohibited Employment Declaration" form.
*It is an offence under the NSW Child Protection (Prohibited
 Employment) Act 1998 for a person convicted of a serious sex offence to
 apply for this position.*

List where prepared to teach:

- 10 Specific Schools (list code):

Districts:

Locations:

List specific schools (if any) where not prepared to teach (list code):

Option of including CV/resume

15

- The teacher's system would reflect this information. On a regular basis
 each teacher would update his/her availability, thus maintaining the
 calendar/diary's accuracy. Also recorded are approximately three placements
 taken by the teacher through the agency system, which will ordinarily be the
 20 most recent ones. Each previously completed placement may include a
 comment from the school on that teacher's performance. The teacher cannot
 amend these comments but can nominate the particular schools which are
 displayed.

- For accounting reasons the system also records the schools at which
 25 the teacher employed through the system and the term of each period of
 employment. In addition the number of days each teacher was absent each
 year could also be recorded, if the employer sought this service.

- Referring now to Fig. 2, when a vacancy/vacancies arise/s 9, the school
 uses the software applications installed on the school's sub-system 2 to list
 30 the vacancy/vacancies on their calendar/diary 10 and to generate vacancy
 information for the relevant staff. The type of information required would be
 as follows:

Type of teacher (use code);

Starting date of employment;

- 35 Number of days (including half days and hours);

Place of employment (name of school);

Classes to be taught;
Any special qualifications required (if any);
Location of childcare facility.

5 This information could be entered into the system directly by the
school in the event of a vacancy. Alternatively, if the school's sub-system
maintained a record of the teaching commitments of the current staff, the
school may select the name of the teacher that is absent and enters the dates
which the teacher needs to be replaced. In this way, the system may retrieve
10 automatically from the system the details of that teaching commitment that
needs replacing, and accordingly the qualifications that the replacement
teacher needs. More than one vacancy could be entered into the system in
this manner.

 The creation of vacancy information by a school on their calendar/diary
15 automatically activates the system 1. The system receives the vacancy
information and stores it in a vacancy data store, and then performs a cross-
check the vacancy details with the existing teaching commitments of the staff
employed by the school to provide the most appropriate and economical
manner to replace the teacher, in that the current staff may be able to cover
20 some of the absent teacher's commitments. The school's requirements are
cross-matched 11 against all teachers registered on the system. Any teacher
that is qualified to fill the vacancy, possesses the special qualifications
requested (if any) and is available will appear on the list of generated people.

 This list is then ranked using the categories predefined by the school
25 listed above 12 including a 'seek-first-search' list of particular teachers who
are given the overall highest ranking for that school. The school has the
option to automatically re-sort any random casuals within their particular
categories in order to overcome any bias. The names of the three teachers at
the top of the list are then displayed 15.

30 With each of the three teachers nominated by the system, a list of three
previous placements taken by the teacher is displayed, along with an optional
descriptive comment from that school on the teacher's performance. If
desired, the school may re-prioritise the ranked teachers by changing their
order on the list.

35 The first teacher on the list is automatically selected 17 and is
preliminarily booked while the offer of employment is communicated to them

in real-time. That teacher is now considered temporarily unavailable by the system for the dates included in the offer.

A completed Voice/WAP message is automatically compiled with the relevant information inserted and is sent 19 to the teacher. An example of a
5 voice message sent to the teacher is as follows:

This call is for (teacher name)
An offer of employment from the NSW Department of Education and
Training. To continue enter your casual approval number and press #
10 <upon successful entry>
Please enter your numbered pass code and press #
<upon successful entry>
(Name of school) offers you (number of full time days) from (starting
date) to (ending date).
15 To accept this offer press 1#
To reject press 2#"
<upon acceptance or rejection>
You have (accepted or rejected) the offer;
<details of offer repeated>
20 Is this correct? If correct, press <#> <if successful, call ends>;
If incorrect press <#>;
To accept the offer press <#>;
To reject press <#>.

25 This message will be able to accommodate for a range of possibilities
including the 'possible subjects' that that the teacher might teach during the
offered term of employment. There is also the capacity to be guided through
several incorrect attempts before being cut off, repeating certain information
and also to advise of an inappropriate response.

30 Alternatively, once the generated list of available teachers is created,
the invitation to fill the vacancy information may be forwarded to the school
so that the school may manually telephone the teacher themselves. If the
school nominates to contact a particular teacher on the list by using this
'phone option', the system simply displays the teacher's contact details after
35 the principal has selected the preferred casual. Once the casual has been
selected, he/she is automatically considered booked by the system and

remains so until the principal 'accepts' or 'rejects' the offer on behalf on the selected teacher. The cycle then continues as described above until the offer is accepted by a teacher.

Where automatic updating of the teacher's and school's
5 calendars/diaries is not possible, a school can select one or more teachers from its generated ranked list and mark them as 'preliminarily booked'. These teachers are now considered by the system as unavailable for a short period of time, for example five minutes, while they are contacted in sequence.

The teacher has a short pre-determined time period, for example two
10 minutes, in which to respond to the offer. The allowed response time may vary depending on the time available before the vacancy needs to be filled and according to what time of the day, or week the offer message is sent. For instance, if the offer message is sent late at night, the acceptance message may not have to be sent until 7am of the next school day. The reply is sent in
15 real-time via a WAP/Internet message which is largely pre-stored in template form on the teacher's sub-system and is automatically generated with the appropriate information once an offer is received and the teacher initiates a response.

The school system automatically responds to a negative response 23 or
20 lack of response 24 to an offer after the stipulated time period expires. On the receipt of either of these responses the teacher who did not accept is automatically suspended in limbo 25 and is considered unavailable by the system until the school that made the offer has secured a replacement teacher by receiving an acceptance to the offer of employment from another teacher.
25 This not only ensures that this teacher cannot re-enter the available list of this particular school that day, but also means that at least temporarily that teacher cannot be offered employment at another school.

Rejections or failures to reply are recorded against the teacher's name. After a predetermined number of such incidences the teacher's 'default status'
30 is set to a predetermined value. Future incidences of failure to reply or rejections will increase this default status 27. The value of the default status could be used to prioritise a teacher's ranking in future lists of available teachers generated by schools. Once a teacher's default status reaches a predetermined value, it can be used to suspend the teacher from the system
35 for a predetermined penalty period. The length of this extended suspension would vary depending the number of times the teacher has previously had

such notices recorded. This is a way of exerting pressure on the teacher to ensure that he/she maintains an up-to-date calendar which genuinely reflects his/her willingness to accept offers from the schools on his/her nominated list. In the long term this should reduce the capacity for spurious hits by schools on unavailable teachers.

If the school does not receive an acceptance to their offer of employment from the contacted teacher within the predetermined time period, the teacher is removed from the top of the ranked list 26 and the next teacher on the ranked list of available teachers is preliminarily booked 17 and sent a WAP/voice message 19 containing the identical offer. This cycle is repeatedly executed, working down the list of available teachers until a reply of acceptance is received by the school. However, the employer has discretion to discontinue the process if the search gets below a certain level of ranking.

Once an acceptance is received by the school 29, both the school's and teacher's calendars/diaries are automatically updated in real time to reflect the acceptance 31. An acceptance from the employee is a binding agreement. The teacher's availability for other days and times remains unaffected 32.

Acceptance may involve the teacher sending a reply via WAP/WEB. Acceptance by phone is also possible 30, and 1900, 1800 or 13 numbers may be used to accept an offer of employment.

This could involve the use of registration numbers, pin numbers and possibly CLI (caller-line identification) that would provide similar security to that offered by banking services. The use of CLI would mean that the person making the call from a registered phone, such as a mobile that had received an offer of employment could be identified automatically. Therefore it could be assumed that the person was making a positive response to the offer and a hold could be placed on the offer until the person had enough time to complete the inputting of the security information and completed the acceptance and possible payment procedures.

A possible example of an interactive voice message, to which the teacher makes a response, inputting the correct registration and pin numbers may be: 'You have been offered 7 Full Time Equivalent days at Plumpton High School commencing 2.4.2001. If you accept this offer please press 1#. Reject 2#.' Because of costs involved, the teacher may be encouraged to only respond when accepting offers. If a positive response is not received within the mandatory time-period, an automatic rejection may be imposed.

Once the teacher completes their placement, there may be the option, if both parties are in agreement for the school to place a comment on the teacher's performance on the system 33, so that it is available to all future employers registered with the system. Alternatively, if the teacher does not
5 turn up at the school to fulfil the employment offer, this will be noted against the teacher. Repeated instances of failing to turn up may also affect the teacher's ranking as did the teacher's default status 27. These records can be used to purge teachers from the system who are unreliable or are not genuinely committed to being available for employment. A school may seek
10 to clarify a teacher's record (i.e. the default status and failures to appear noted against a teacher's name). Such requests can automatically be generated by the system and sent to the teacher immediately upon accessing their sub-system. A teacher will also have the ability to appeal any such records in order to maintain the system's accuracy.

15 For accounting and administration reasons the system is also able to automatically update in real-time the school at which the teacher is employed and the term of each period of employment. This is recorded on both the school and teacher sub-systems which may be accessed by them at a later stage to retrieve their past records. The system, by providing the school the
20 ability to record information such as the number of days each permanent teacher was absent or days where a casual teacher failed to appear, may interact with the school's administration to both input and extract information helpful to its departments such as the pay-roll system. The information may also be shared with the department of education.

25 The conditions created by the completion of the system's cycle, may invoke a similar cycle, say for of filling a child minding service vacancy, in a parallel system. For example, once an offer has been accepted, the teacher may require child minding while they travel to and from the appointment and while they are teaching. The information of the resulting child-minding
30 requirements can be communicated to a parallel system that is operating to employ child-minding staff by a childcare facility.

This parallel system would receive child-minding information from the result of employing one or more teachers. These requirements can be rationalised out by the system to calculate the amount of child-care staff
35 required, taking into account the possible child minding needs of the childcare staff. The amount of child-minding staff will be largely dependent

on the age and number of the children that need minding. As the system stores the dates of birth of each of the children that may require childcare, it readily recognises the ages of all children requiring childcare on any particular day. Thus by using the Government recommended staff-to-
5 children ratios such as 1:5 for children younger than 2 years of age and 1:8 for children between 2 and 3 years and 1:10 for children older than 3 years, the system can give an instant readout of the hourly staffing requirements of the childcare facility. The child-minding facility is able to control the rationalisation process to amend this calculating algorithm (i.e. the facility
10 may prefer to employ more than the legal minimum). Having calculated the amount of staff required, the childcare centre may activate the creation of a new cycle in the system that goes through the steps 9 to 33 above to find replacement staff.

15 Further Options

If the system cannot exactly match the school's request with teachers' availability, the system can notify the school, who can then choose the option of activating the 'nearest possible availability match'. This option would seek to find a teacher who is available for some of the required days. For instance,
20 the search of the data store may find a teacher who cannot work the whole week as requested by the school, but is available for the first four days of the week. Such a teacher would be ranked above someone who is available for only one to three days or a teacher who is available for the last four days the school requires, but not the first day, as the most immediate problem
25 confronting the school is to find a teacher for the most immediate days. Having booked someone for the first few days, the school then has a few days breathing space in which to find another teacher to take the fifth day, or make some other arrangements within the school.

If a school was frequently presented with this problem it could
30 nominate to have an option of finding the best possible mix of teachers automated. In such a case the system, after unsuccessfully searching the system for a teacher for the requested five days, would automatically search for a teacher for the first four days, then three days etc. Having secured such a teacher, the system would then search for a teacher to complement this
35 teacher's booking and thus match the school's request by employing two or more teachers. However, the school would have the option of pre-

determining the maximum number of teachers the system could employ to fill the extended vacancy. In this way the school could avoid the situation arising in which five different teachers are employed to fill a five-day vacancy

Teachers may also be given the option of creating a priority list to rank prospective schools. In this way, if two or more schools are searching for a Physical Education (PE) teacher and these schools have the same teacher ranked first on their generated availability list for a vacancy, then the school which the PE teacher had previously ranked the highest in his/her priority order, will have their offer of employment sent to that teacher first.

If offers are conveyed a long enough time before an employer's nominated response time and date, the teacher could be shown a list of schools seeking his/her services and details of the offers of employment. That is to say that if offers were conveyed on the previous day or evening and a mandatory employer nominated response time was 7am the following morning, the teacher may have the opportunity to review the list of schools which are making an offer to him/her as their first priority and examine the details of the offer in order to decide which offer he/she may accept. Whilst the schools will be ranked according to the teacher's predetermined priority order, the terms and length of employment may differ. Thus a teacher may elect to take the third ranked school which is offering a longer period of employment, or a year level which he/she prefers to teach.

A teacher may also elect to chose the option in which the system ranks schools currently offering employment according to the duration of time or the number of FTE (full time equivalent days) the particular school is offering. This FTE ranking can either be done within specific priority categories previously allocated to schools by the teacher, or across the full spectrum of schools making offers of employment.

The system is updated as teachers accept or reject offers. For instance a teacher who accepts the third ranked offer is in effect rejecting all other offers and his/her calendar/diary is automatically blocked for these particular days. As a consequence, all the remaining offers which this teacher had are automatically rejected. Subsequently the next highest ranked teacher for these remaining offers will have his/her list of offers automatically updated to reflect that he/she is now being offered employment at one or more of the schools still seeking a teacher.

Early offers of employment are likely to arise as a result of maternity of long service leave by an employee. These early offers are most suited to the Internet type of communication means and will have a mandatory set time, such as 7am of the day when the employment is to commence, in which the system reverts to the automated or manual phone system continuing the cycle until a suitable teacher for the vacancy is found. In continuing the cycle, offers of employment not accepted by a teacher after that period would automatically be made to the school's next ranked teacher.

Likewise, for offers of employment in which the starting date of the employment is a considerable time in the future, there may be attached to the offer a time and date at which that offer will lapse and therefore be made available to the next ranked teacher. In order to enable teachers to choose the employment offer most suited to their needs, there would be no penalties or suspension for teachers rejecting all but one of the early offers made to him/her before 7am on the day nominated by the school.

To eliminate the need to have someone such as a school principal/executive or human resource manager to input arising vacancies once they have been notified of such vacancies, it would be possible to amend the system in such a way that trusted and/or nominated staff could, with or without notifying the employer through a system of security codes, be allowed to enter the vacancies which they may generate through illness, misadventure, overlapping contractual problems or travel difficulties, which after validation checks, would be automatically entered on the employer's calendar and the process of cross-matching is automatically initiated. In this way the workload of the principal/human resource manager would be greatly reduced. In some businesses this may lessen the number of HR managers required.

For businesses in which highly qualified people are working to tight schedules and need to rely on national and international travel in order to get them to their next appointment, this fully automated 'auto-replace' system would allow the most suitable replacement for a delayed or sick employee to be found in the shortest possible time, without reference to a third party.

In areas of employment such as schools and many businesses, the employees could log onto their site and indicate the days they are to be absent. This information would be held in the system until the employer has the opportunity to review the number of people to be absent, the term of each

absence as well as the reasons for the absences before initiating the process of cross-matching to find a replacement employee. In this way the employer has the opportunity to review staff requirements for the specific period. This may provide the employer the opportunity of making some internal

5 rearrangements within the organisation so as to rationalise the number or replacement staff required. In such a circumstance it would be advisable to encourage staff to give early notification of absence, for example 6:30am, so that the school has some time to review staffing options before the cross-matching to find replacement staff.

10 If a late notification of absence was received by the system the employer would be sent a 'late notification of absence' message notifying the employer of the details and the possible need to reassess staff requirements. The employer may either then ignore the option to vary the previous staffing request; alter the request for replacement staff by adjusting school's vacancy
15 details; or choose to simply replace the absent staff member.

The method and system are readily adaptable to use as a rostering system, in which the initial and on-going rosters are prepared by the employer using the availability calendars/diaries of the employees, prospective employees and contractors.

20 Any business, large or small, or any employer can use previously outlined calendars and ranking systems to allocate hours/positions to staff.

While this system has been described with particular reference to the employment of teachers within the education system, it should be appreciated that the system could be altered to recruit or manage any form of
25 staff within any area of employment.

This system can be used in such a way that individual employers for example a large hospital and other health services. The system would operate in the same way but be designed to accommodate for the different needs of the health industry such as the use of a 24-hour calendar and the
30 inclusion of information on the health facilities, wards and medical qualifications of the potential staff. Additional skills of the potential staff may also be included such as second languages that are relevant to the health care facility. The grading algorithm used by health facilities may bias the permanent staff. Accordingly, the permanent staff may also place on the
35 system their preferences for shifts. In the event of a vacancy the system will go through the procedures outline in steps 9 to 33 above. The recruiting of

casual nurses through this system may benefit greatly from a parallel system offering child-minding services. As the nurse availability calendars are 24 hours, the parallel system recruiting casual child-minding staff may also operate on a 24-hour calendar. The child-minding service could also be
5 offered to the full and part time staff of the health facility to promote a more flexible rostering system ameliorating many of the difficulties associated with the recruitment and retention of nursing staff. In addition, childcare could be offered to the children of the childcare workers.

Alternatively the system could be also be used to fill any shifts that
10 remain cannot be covered by the permanent full-time and permanent part-time staff. For example, after compiling a roster, a Director of Nursing (DON)/Nursing Administrator may discover that there are vacant shifts (holes). The DON/Nursing Administrator uses a 'Quick Fix' facility indicate the number of RNs required for each shift. The relevant dates are input and
15 then the system takes into account the nurses' qualifications and availability along with each nurse's nominated maximum number of consecutive days and the maximum number of days per roster he/she is willing to work to allocate shifts to nurses who match the DON's request. A nominated 'buffer' usually about 8 hours is used to ensure that nurses do not receive consecutive
20 shifts.

Once the cross matching has been completed, details of the offers of employment can be posted on each nurse's sub-system. As rosters are required to be completed some weeks before the actual first day of work during the relevant roster, it would be possible to give the nurse
25 approximately 24 hours to accept or reject each or all of the shifts simply by pressing an 'accept' or 'reject' button on his/her personal Internet/Intranet page.

After a nominated period the DON would receive a read-out of the details of the shifts that had been filled (accepted) and the shifts that were
30 still unfilled. The DON would then have the option of getting the system to repeat the search for available nurses and again make offers of employment via the Internet or Intranet, or use a messaging system or using the 'Phone Option' to speak personally to nurses whom the system has identified as available during the relevant vacant shifts.

35 As childcare details are associated with all nurses who have requested childcare during the relevant shifts, these details can be taken into account

prior to offering employment to the nurse, as well as used to update the Director of the childcare facility of incoming children and any particular care requirements relevant to each child. The system can also provide details of available childcare workers so that the required childcare workers can be
5 phoned or messaged.

When searching for replacement nurses the system first considers whether the potential employee (being a nurse) has the special qualifications required (i.e. experience in a particular ward). This will exclude all registered nurses that do not hold the nominated requisite qualifications).
10 The system may alternatively search for those nurses who possess the preferred qualifications. The system will initially search for nurses who hold the 'preferred' additional nursing speciality qualifications. When this list is exhausted, the system will seek nurses without the 'preferred' additional nursing qualifications, until such time as the vacancy is filled or the pool of
15 available RNs is exhausted.

Other employers that may utilise the system are government and semi-government bodies, retailers, service providers, casinos and professional bodies may enter into a contract in which the service is provided directly to them. This could be seen as an in-house service or an out-sourcing service
20 and would be negotiated on an employer by employer basis. Such a scheme would highlight the individual employer's level of control over the process, whilst at the same time enabling the employer to quickly obtain staff without the current excessive fees associated with outside bodies such as nursing or employment agencies.

25 On the other hand the service could take the form of a more general format in which the system seeks to enlist as many casuals, part-time and contract workers as possible and then basing the revenue on either charging them a membership fee, placing them on phone contracts, or charging the employer and/or employee a placement fee or percentage of wage/salary fee.
30 Obviously such an approach would still require the cooperation of large-scale employers. However, it would differ from the previous approach in as much as the employer is not contracted for the provision of service specifically designed for their company and over which that company has a larger degree of control.

35 The system can be expanded to add favourable features in the future directed towards the specific industries that are the end users of the system.

This could include a chat room to attract users to this service and provide a forum where appropriate issues could be discussed and a more expansive calendar including social, seminar and conference dates. Systems contracted to specific large employer, employer groups/bodies or even union groups
5 could include industry related news on upcoming seminars, conferences, notices for upcoming permanent employment positions and relevant advertising. The system could also be adapted to include information about job and/or house swapping in appropriate holiday periods. Specifically targeted advertisements of interest to the users could be included and would
10 also serve as a generator of income. Professional advice such as resume updating and career management could also be introduced to the system in order to encourage people to use the system.

It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the
15 specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

Claims

1. A method for filling vacancies comprising the steps of:
entering availability details into a candidate data store;
5 entering vacancy details into a vacancy data store;
automatically cross-matching each vacancy to availability details to
create a list of available candidates for each vacancy;
automatically ordering the list for each vacancy to rank the candidates
according to predetermined criteria;
10 filling each vacancy in turn with the top ranking available candidate.
2. A method according to claim 1, where the filling of each vacancy is automatic.
3. A method according to claim 1, comprising the further step of
communicating an invitation to the top ranked candidate in respect of each
15 vacancy and filling that vacancy, by updating the candidate and vacancy data
stores, if a positive response is received within a predetermined time;
otherwise, if a negative response is received, or no response is received
within the predetermined time, then communicating another invitation to the
next ranked candidate, as above, until the vacancy is filled.
- 20 4. A method according to any preceding claim, where the candidates are
casual employees, and information about the working commitments of the
permanent staff currently employed by an employer are entered into a data
store so that vacancy information is entered into the vacancy data store by
nominating the absent permanent staff person's name and automatically
25 providing all their work commitment information.
5. A method according to claim 4, where the casual staff requirement is
automatically rationalized by analyzing the work commitments of all the
absent permanent staff over a given period of time.
6. A method according to claim 1, comprising the further step, where a
30 vacancy cannot be matched to an availability, or no suitable available
candidates are found, of splitting the vacancy into smaller sub-vacancies and
cross-matching each sub-vacancy to availability details to create a list of
available candidates for each sub-vacancy, then ranking.
7. A method according to any preceding claim, where the predetermined
35 criteria are defined by the employer.

8. A method according to claim 7, where the criteria include experience and performance.
9. A method according to claim 8, where the criteria include a 'seek-first' criterion that gives a top ranking to candidates identified by that employer.
- 5 10. A method according to claim 8 or 9, where the criteria include ranking adjustments for a candidate available to fill successive vacancies, whether for the same or a different position, over several days in a given period of time.
11. A method according to any preceding claim, where templates of the invitations are pre stored and the appropriate vacancy and candidate
10 information automatically inserted upon generation of the invitations.
12. A method according to any preceding claim, where the communicating of the messages is done automatically using any suitable communications medium.
13. A method according to any preceding claim, where the first ranked
15 candidate is automatically preliminarily booked and considered unavailable for the dates and hours included in an invitation during the time that the invitation remains open to that candidate, or until they transmit a response.
14. A method according to any one of claims 1 to 12, where multiple offers are sent to a candidate, and once the candidate accepts one of them, a
20 rejection is automatically recorded for the others.
15. A method according to any preceding claim, where the candidate data store stores one or more of the following types of information: instances of inaccurate information provided by a candidate, instances where a candidate declines an employment offer, instances where a candidate fails to appear for
25 an accepted offer, and this information is used to affect that candidates ranking.
16. A method according to any preceding claim, where the candidate data store stores details of positions accepted by a candidate and comments on their performance.
- 30 17. A method according to any preceding claim, where the cross matching of availability utilizes electronic diaries, calendars or rosters of employers, employees and candidates, and these are automatically updated via the candidate and vacancy data stores to keep them synchronized.
18. A method according to any preceding claim, where a second
35 implementation of the method is layered over a first implementation to provide support services to candidates accepting a vacancy.

19. A method according to claim 18, where the first implementation is used to recruit casual staff, and the second implementation is used to find child-minding for the candidates to enable them to accept invitations.
20. A method according to claim 18 or 19, where the two implementations
5 communicate with one another so that a vacancy offered to a candidate causes an invitation to be issued for a child minding place, and if the child minding place is available the vacancy offered to the candidate is automatically accepted.
21. A computer system for filling vacancies, comprising:
10 a candidate data store to accept and store availability details data;
a vacancy data store to accept and store vacancy data;
a processor to automatically cross-match each vacancy to availability details to create a list of available candidates for each vacancy, to automatically order the list for each vacancy to rank the candidates according
15 to predetermined criteria, and to fill each vacancy in turn with the top ranking available candidate.
22. A system according to claim 21, where each vacancy is automatically filled.
23. A system according to claim 22, where the system operates to forward
20 an invitation for transmission to the top ranked candidate in respect of each vacancy and to receive a response, and to fill that vacancy by updating the candidate and vacancy data stores if a positive response is received within a predetermined time; otherwise, if a negative response is received, or no response is received within the predetermined time, to forward another
25 invitation for transmission to the next ranked candidate, and so on, until the vacancy is filled.
24. A system according to any preceding claim, where the system further comprises a communications subsystem for transmitting the invitations and receiving responses to them.
- 30 25. A system according to any one of claims 21 to 24, where the candidates are casual employees, and information about the working commitments of the permanent staff currently employed by an employer are entered into a data store so that vacancy information is entered into the vacancy data store by nominating the absent permanent staff person's name and automatically
35 providing all their work commitment information.

26. A system according to claim 25, where the casual staff requirement is automatically rationalized by analyzing the work commitments of all the absent permanent staff over a given period of time.
27. A system according to claim 21, comprising, where a vacancy cannot
5 be matched to an availability, or no suitable available candidates are found, of splitting the vacancy into smaller sub-vacancies and cross-matching each sub-vacancy to availability details to create a list of available candidates for each sub-vacancy, then ranking.
28. A system according to any one of claims 21 to 27, where the
10 predetermined criteria are defined by the employer.
29. A system according to claim 28, where the criteria include experience and performance.
30. A system according to claim 29, where the criteria include a 'seek-first' criterion that gives a top ranking to candidates identified by that employer.
- 15 31. A system according to claim 29 or 30, where the criteria include ranking adjustments for a candidate available to fill successive vacancies, whether for the same or a different position, over several days in a given period of time.
32. A system according to any one of claims 21 to 31, where templates of
20 the invitations are pre-stored and the appropriate vacancy and candidate information automatically inserted upon generation of the invitations.
33. A system according to any one of claims 21 to 32, where the communicating of the messages is done automatically using any suitable communications medium.
- 25 34. A system according to any one of claims 21 to 33, where the first ranked candidate is automatically preliminarily booked and considered unavailable for the dates and hours included in an invitation during the time that the invitation remains open to that candidate, or until they transmit a response.
- 30 35. A system according to any one of claims 21 to 33, where multiple offers are sent to a candidate, and once the candidate accepts one of them, a rejection is automatically recorded for the others.
36. A system according to any one of claims 21 to 35, where the candidate data store stores one or more of the following types of information: instances
35 of inaccurate information provided by a candidate, instances where a candidate declines an employment offer, instances where a candidate fails to

appear for an accepted offer, and this information is used to affect that candidates ranking.

37. A system according to any one of claims 21 to 36, where the candidate data store stores details of positions accepted by a candidate and comments
5 on their performance.

38. A system according to any one of claims 21 to 37, where the cross matching of availability utilizes electronic diaries, calendars or rosters of employers, employees and candidates, and these are automatically updated via the candidate and vacancy data stores to keep them synchronized.

10 39. A system according to any one of claims 21 to 38, where a second implementation of the system is layered over a first implementation to provide support services to candidates accepting a vacancy.

40. A system according to claim 39, where the first implementation is used to recruit casual staff, and the second implementation is used to find child-
15 minding for the candidates to enable them to accept invitations.

41. A system according to claim 39 or 40, where the two implementations communicate with one another so that a vacancy offered to a candidate causes an invitation to be issued for a child minding place, and if the child minding place is available the vacancy offered to the candidate is
20 automatically accepted.

AMENDED CLAIMS

[received by the International Bureau on 26 June 2002 (26.06.02);
Claims 1 and 21 amended (2 sheets)]

1. (Amended) A method for filling vacancy periods comprising the steps of:
 - 5 entering availability details into a candidate data store;
 - entering vacancy details into a vacancy data store;
 - automatically cross-matching each vacancy to availability details to create a list of available candidates for each vacancy;
 - automatically ordering the list for each vacancy to rank the candidates
 - 10 according to predetermined criteria;
 - filling each vacancy in turn with the top ranking available candidate.
2. A method according to claim 1, where the filling of each vacancy is automatic.
3. A method according to claim 1, comprising the further step of
15 communicating an invitation to the top ranked candidate in respect of each vacancy and filling that vacancy, by updating the candidate and vacancy data stores, if a positive response is received within a predetermined time;
otherwise, if a negative response is received, or no response is received within the predetermined time, then communicating another invitation to the
20 next ranked candidate, as above, until the vacancy is filled.
4. A method according to any preceding claim, where the candidates are casual employees, and information about the working commitments of the permanent staff currently employed by an employer are entered into a data store so that vacancy information is entered into the vacancy data store by
25 nominating the absent permanent staff person's name and automatically providing all their work commitment information.
5. A method according to claim 4, where the casual staff requirement is automatically rationalized by analyzing the work commitments of all the absent permanent staff over a given period of time.
- 30 6. A method according to claim 1, comprising the further step, where a vacancy cannot be matched to an availability, or no suitable available candidates are found, of splitting the vacancy into smaller sub-vacancies and cross-matching each sub-vacancy to availability details to create a list of available candidates for each sub-vacancy, then ranking.
- 35 7. A method according to any preceding claim, where the predetermined criteria are defined by the employer.

AMENDED SHEET (ARTICLE 19)

19. A method according to claim 18, where the first implementation is used to recruit casual staff, and the second implementation is used to find child-minding for the candidates to enable them to accept invitations.
20. A method according to claim 18 or 19, where the two implementations
5 communicate with one another so that a vacancy offered to a candidate causes an invitation to be issued for a child minding place, and if the child minding place is available the vacancy offered to the candidate is automatically accepted.
21. (Amended) A computer system for filling vacancy periods,
10 comprising:
a candidate data store to accept and store availability details data;
a vacancy data store to accept and store vacancy data;
a processor to automatically cross-match each vacancy to availability
15 details to create a list of available candidates for each vacancy, to automatically order the list for each vacancy to rank the candidates according to predetermined criteria, and to fill each vacancy in turn with the top ranking available candidate.
22. A system according to claim 21, where each vacancy is automatically filled.
- 20 23. A system according to claim 22, where the system operates to forward an invitation for transmission to the top ranked candidate in respect of each vacancy and to receive a response, and to fill that vacancy by updating the candidate and vacancy data stores if a positive response is received within a
25 predetermined time; otherwise, if a negative response is received, or no response is received within the predetermined time, to forward another invitation for transmission to the next ranked candidate, and so on, until the vacancy is filled.
24. A system according to any preceding claim, where the system further comprises a communications subsystem for transmitting the invitations and
30 receiving responses to them.
25. A system according to any one of claims 21 to 24, where the candidates are casual employees, and information about the working commitments of the permanent staff currently employed by an employer are entered into a data store so that vacancy information is entered into the vacancy data store by
35 nominating the absent permanent staff person's name and automatically providing all their work commitment information.

SCHEMATIC DIAGRAM OF SYSTEM OVERVIEW

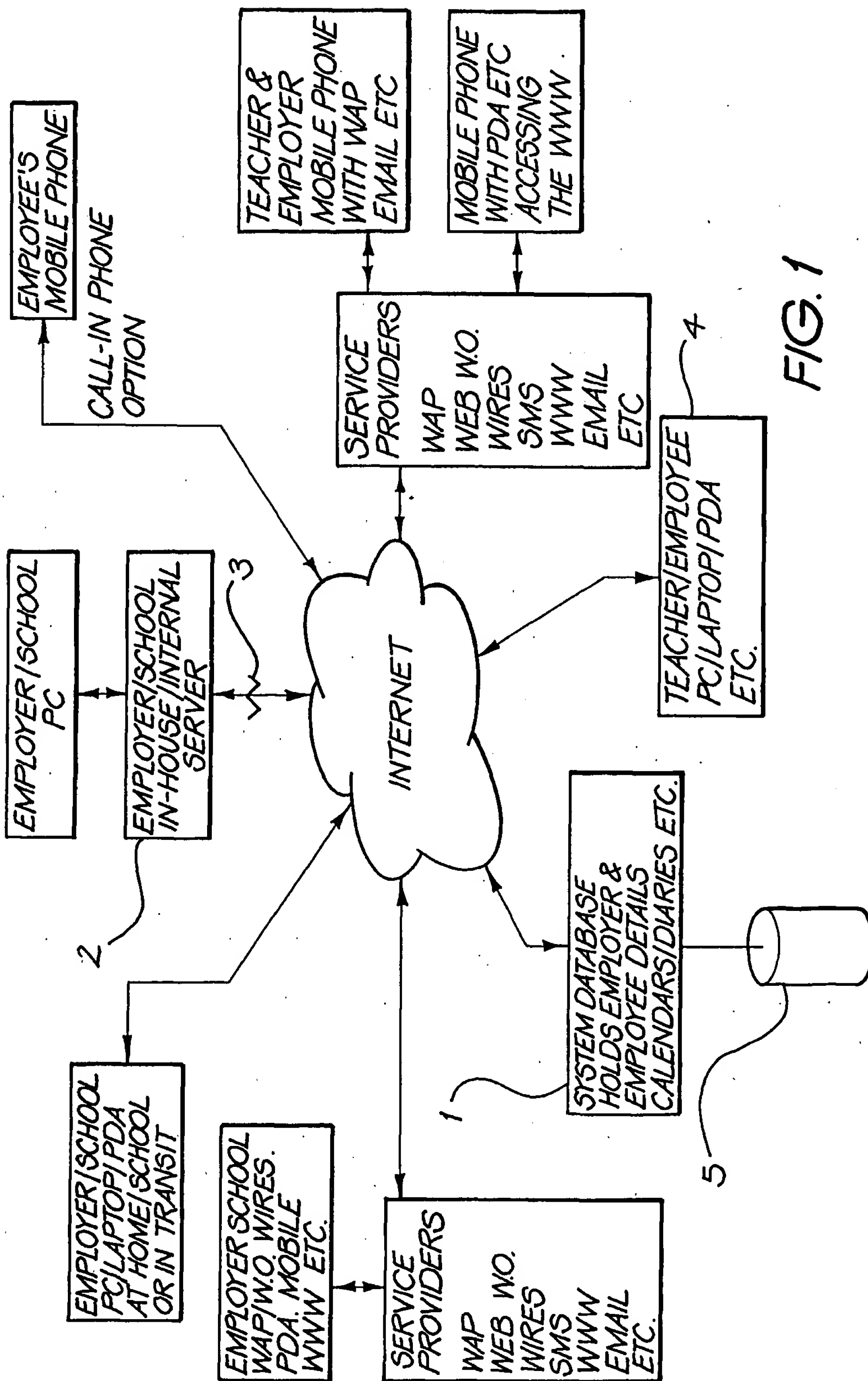


FIG. 1

SUBSTITUTE SHEET (RULE 26)

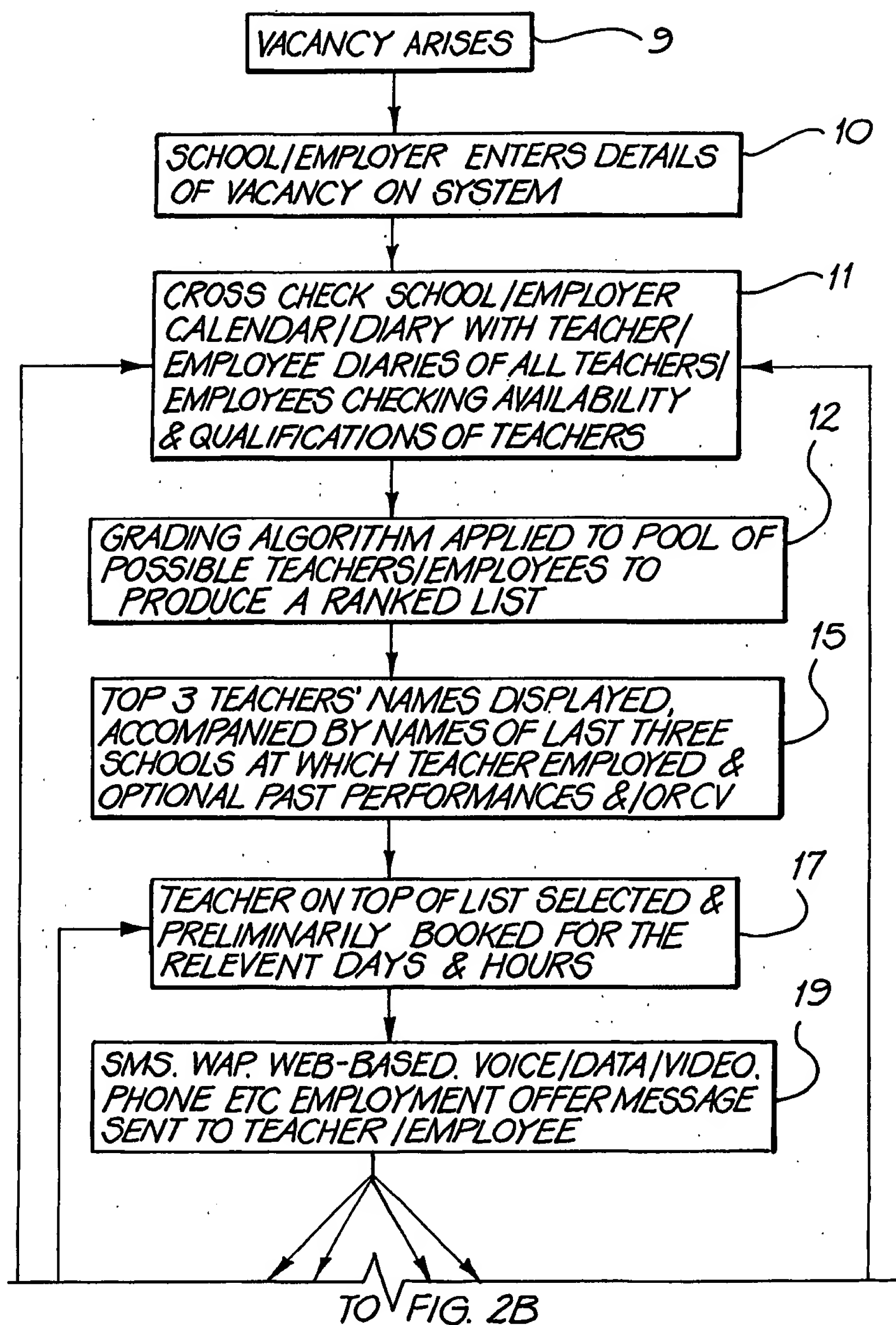
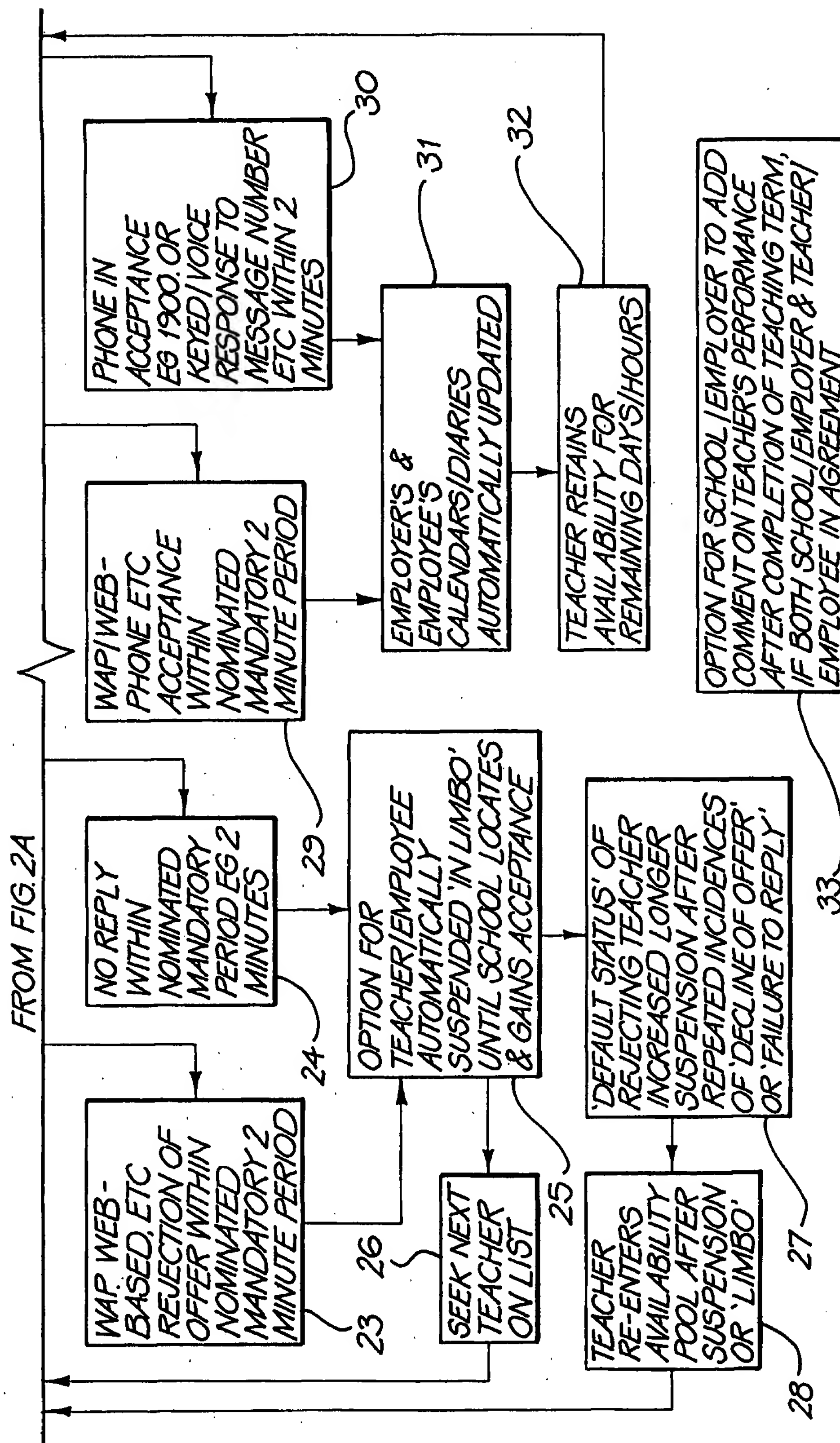


FIG. 2A

SUBSTITUTE SHEET (RULE 26)



INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU02/00198

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. ⁷: G06F 19/00; G06F 17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPAT:IPC Mark, Key words- employ+, job, vacancy, occupation, profession, career, resume, curriculum vitae, biodata,

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,758,324 (HARTMAN et al.) 26 May 1998	1-39
Y	Entire document	40-41
X	WO 98/39716 (ELECTRONIC DATA SYSTEMS CORP.) 11 September 1998	1-39
Y	Entire document	40-41
P,X	US 2001042000 (DEFOOR W) 15 November 2001	1-39
	Entire document	

☒ Further documents are listed in the continuation of Box C ☒ See patent family annex

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 27 March 2002	Date of mailing of the international search report 10 APR 2002
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929	Authorized officer CHARLES BERKO Telephone No : (02) 6283

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU02/00198

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 200161611 (CLICK2HIRE LLC) 23 August 2001 Entire document	1-39
P,X	JP 2001209680 (NTT DATA TSUSHIN KK) 3 August 2001 Abstract	1-39
P,X	JP 2001184392 (SUMITOMO SHOJI KK) 6 July 2001 Abstract	1-39
P,X	WO 200139078 (MEDICAL JOBSPOT.COM INC) 31 May 2001 Abstract	1-39
P,Y	WO200103034 (SDC COMPUTER SERVICES INC) 11 January 2001 Entire document	1-39
P,Y	CA 2281246 (CAREERXACT INC) 28 February 2001 Abstract	1-39

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU02/00198

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report			Patent Family Member	
US	5758324	NONE		
WO	9839716	AU	61820/98	
US	2001042000	NONE		
WO	200161611	AU	200141563	
JP	2001209680	NONE		
JP	2001184392	NONE		
WO	200139078	AU	200117911	
WO	200103034	AU	200062020	
CA	2281246	NONE		
END OF ANNEX				